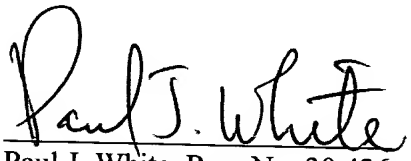
Should any additional issues need to be resolved, the Examiner is requested to telephone the undersigned to attempt to resolve those issues. If a further written action is required, Applicant requests that the prior final rejection be withdrawn for the reasons noted above.

Respectfully submitted,



Paul J. White, Reg. No. 30,436
Attorney for Applicants

Dated: October 22, 2001.

National Renewable Energy Laboratory
1617 Cole Blvd.
Golden, CO 80401
303/384-7575

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Shi-You Ding, et al.	Docket No.:	NREL 01-37
Serial No.:	09/917,383		
Filed:	July 28, 2001		
Title:	THERMAL TOLERANT MULTI-DOMAIN CELLULASE FROM ACIDOTHERMUS CELLULOLYTICUS		

AMENDMENTS -- MARKUP

Please replace the third full paragraph on page 13, beginning line 19, with the following paragraph:

"Thermal tolerant" refers to the property of withstanding partial or complete inactivation by heat and can also be described as thermal resistance or thermal stability. Although some variation exists in the literature, the following definitions can be considered typical for the optimum temperature range of stability and activity for enzymes: psychrophilic (below freezing to 10C); mesophilic (10°C to 50°C); thermophilic (50°C to 75°C); and caldophilic (75°C to above boiling water temperature). The stability and catalytic activity of enzymes are linked characteristics, and the ways of measuring these properties vary considerably. For industrial enzymes, stability and activity are best measured under use conditions, often in the presence of substrate. Therefore, cellulases that must act on process streams of cellulose must be able to withstand exposure up to thermophilic or even caldophilic temperatures for digestion times in excess of several hours.

Please replace the third full paragraph on page 15, beginning line 23, with the following paragraph:

Cellulases belong to the GH family of enzymes. Cellulases are produced by a variety of bacteria and fungi to degrade the beta-(1,4)-[β-1,4]glycosidic bond of cellulose and to so produce successively smaller fragments of cellulose and ultimately produce glucose. At present, cellulases are found within are at least 11 different GH families. Three different types of cellulase enzyme activities have been identified within these GH families: exo-acting cellulases which cleave successive disaccharide units from the non-reducing ends

of a cellulose chain; endo-acting cellulases which randomly cleave successive disaccharide units within the cellulose chain; and β-glucosidases which cleave successive disaccharide units to glucose (J. W. Deacon, (1997) Modern Mycology, 3rd Ed., ISBN: 0-632-03077-1, 97-98).

At page 34, please replace lines 10-12 with the following:

```
GH6_Ace      -ATHVDNPYAGATFFVNPYWAQEVQSEAANQTN-ATLAAKMRVVSTYSTAVWMDRIAAIN (SEQ ID NO: 9)
CBHA_Cfi     APVHVDNPYAGAVQYVNPTWAASVNAAAGRQSADPALAAKMRTVAGQPTAVWMDRISAIT (SEQ ID NO: 10)
E3_Tfu       PGGPTNPPTNPGEKVDNPFEGAKLYVNPVW-SAKAAAEPGGSAVANESTAVWLDRIGAIE (SEQ ID NO: 11)
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At page 35, please replace lines 22-24 with the following:

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Cel12A_SSp   NQQICDRYGTTTIQD-RYVVQNNRWGTSATQCINV-TGNG-FEITQADGSVPTN (SEQ ID NO: 12)
CelB_SLi     DTTICEPFGTTTIQG-RYVVQNNRWGSTAPQCVTA-TDTG-FRVTQADGSAPTN (SEQ ID NO: 13)
GH12_ACe     CTPGPNQNGVTSVQGDEYRVQTNEWNSSAQQCLTINTATGAWTVSTANFSGGTG (SEQ ID NO: 14)
```